CLAIMS:

We claim:

1.   A parent-bridge, comprised of:
        a child-link for receiving a plurality of transactions; and
        a transaction identifier communication link for receiving a plurality of transaction identifiers for identifying the plurality of transactions; and
        a plurality of transaction order queues associated with the child-link.

2.   The parent-bridge of claim 1, wherein the transaction identifier communication link comprises the child-link.

3.   The parent-bridge of claim 1, further comprising a transaction buffer associated with the child-link.

4.   The parent-bridge of claim 1, further comprising a plurality of transaction buffers associated with the child-link.

5.   The parent-bridge of claim 2, the child-link further comprising:
        a plurality of channels;
        wherein at least one channel of the plurality of channels is used to receive the plurality of transaction identifiers.

6.   The parent-bridge of claim 1, the child-link further comprising:
        a plurality of child-links; and
        a plurality of transaction order queues associated with each of the plurality of child-links.

7.   The parent-bridge of claim 1, further comprising:
        a routing mechanism for routing a transaction with a transaction identifier to a matching transaction order queue.

8.   The parent-bridge of claim 7, wherein each transaction order queue of the plurality of transaction order queues is associated with a transaction order queue identifier uniquely matching a transaction identifier of the plurality of transaction identifiers.

9.   The parent-bridge of claim 7, wherein the routing mechanism routes a transaction with a transaction identifier without a matching transaction order queue to a default transaction order queue.

10.   The parent-bridge of claim 1, wherein the child-link is connected to a bus-bridge.

11.   The parent-bridge of claim 1, wherein the child-link is connected to a bridge-bridge.

12.   A child-bridge, comprised of:
        a plurality of grandchild-links for receiving a plurality of transactions;
        a child-link for sending the plurality of transactions received by the plurality of grandchild-links; and
        a transaction identifier communication link for sending a plurality of transaction identifiers associated with the plurality of transactions sent on the child-link.

13.   The child-bridge of claim 12, wherein the transaction identifier communication link comprises the child-link.

14.   The child-bridge of claim 13, the child-link further comprising:
        a plurality of channels;
        wherein at least one channel is used to send the plurality of transaction identifiers.

15.   The child-bridge of claim 12, wherein at least one of the plurality of grandchild-links is associated with a transaction identifier of the plurality of transaction identifiers.

16.   The child-bridge of claim 12, wherein the at least two of the plurality of grandchild-links are associated with at least two different transaction identifiers of the plurality of transaction identifiers.

17.   The child-bridge of claim 12, wherein the at least two of the plurality of grandchild-links are associated with the same transaction identifier of the plurality of transaction identifiers.

18.   The child-bridge of claim 12, wherein the grandchild-link is connected to a bus.

19.   The child-bridge of claim 12, wherein the grandchild-link is connected to a bus-bridge.

20.   The child-bridge of claim 12, wherein the grandchild-link is connected to a bridge-bridge.

21.   A method of routing transactions with transaction identifiers, the transactions received by a parent-bridge, the parent-bridge comprising a child-link and a plurality of transaction order queues for the child-link, comprising the steps of:

          receiving a transaction on the child-link;

          receiving a transaction identifier for the transaction link;

          matching the transaction identifier to a transaction order queue of the plurality of transaction order queues for the child-link;

          routing the transaction to the transaction order queue.

22.   The method of claim 21, wherein the parent-bridge further comprises a transaction buffer for the child-link, further comprising the step of storing the transaction in the transaction buffer.

23.   The method of claim 21, wherein the parent-bridge further comprises a plurality of transaction buffers for the child-link, further comprising the steps of:

          matching the transaction identifier to a transaction buffer of the plurality of transaction buffers for the child link;

          routing the transaction to the transaction buffer;

          storing the transaction in the transaction buffer.

24.   The method of claim 21, wherein the transaction identifier is received on the child-link.

25.   The method of claim 21, wherein the transaction identifier exclusively matches a single transaction order queue of the plurality of transaction order queues.

26.   A method of routing transactions, the transactions received by a child-bridge on a plurality of grand-child links, the child-bridge connected to a parent-bridge, comprising the steps of:

>   receiving a transaction on a grand-child link;
>
>   originating a transaction identifier;
>
>   sending the transaction to the parent-bridge; and
>
>   sending the transaction identifier to the parent-bridge.

27.   The method of claim 26, wherein the transaction identifier is sent to the parent-bridge on a child-link.

28.   The method of claim 26, wherein the transaction identifier is determined by the grandchild-link on which the transaction was received.

29.   The method of claim 26, wherein the transaction identifier exclusively identifies a grandchild-link of the plurality of grandchild-links.

30.   The method of claim 26, wherein at least one transaction identifier identifies at least two grandchild-links of the plurality of grandchild-links.

31.   A computer system, comprising:

>   a plurality of processors;
>
>   a parent-bridge comprising:
>
>>   a child link; and
>>
>>   a plurality of transaction order queues connected to the child-link; and
>
>   a child-bridge connected via the child-link to the parent bridge and further comprising a plurality of grandchild-links.

32.   The computer system of claim 31, further comprising:

>   a plurality of child-links to a plurality of child-bridges.

33.   The computer system of claim 31, wherein the child-bridge transmits a transaction and transaction identifier to the parent bridge.

34.   The computer system of claim 33, wherein the transaction identifier is associated with a transaction order queue of the plurality of transaction order queues in the parent-bridge.

35.   The method of claim 34, wherein the transaction identifier exclusively identifies a grandchild-link of the plurality of grandchild-links.

36.   The computer system of claim 34, wherein the parent-bridge routes the transaction to the transaction order queue of the plurality of transaction order queues matching the transaction identifier.

37.   The computer system of claim 31, further comprising a transaction buffer connected to the child-link.

38.   The computer system of claim 31, further comprising a plurality of transaction buffers connected to the child-link.